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ABSTRACT

This document contains four papers from a symposium on evaluating the impact of human resource development (HRD). "The Politics of Program Evaluation and the Misuse of Evaluation Findings" (Hallie Preskill, Robin Lackey) discusses the status of evaluation theory, evaluation as a political activity, and the findings from a survey on the use and misuse of evaluation in HRD. "Assessing the Business Results of Management Development Using the Critical Outcome Technique at CIGNA Corporation" (Brent A. Mattson, Lawrence J. Quaranta, Richard A. Swanson) reports on a case study that detailed the utility of the critical outcome technique in evaluating a management development program at a major multiline insurance carrier and financial services company. "Investments in Intellectual Capital: Developing Methods for Measuring Impact and Value of HRD" (Laurie J. Bassi, Mark E. Van Buren) reports on a national cross-industry survey of more than 500 organizations that obtained preliminary evidence of a link between investments in human capital and organizational measures of performance (including market-to-book value). Evidence that HRD interventions focused on performance improvement deliver and 8-to-1 return on investment in 1 year or less is presented in "Demonstrating the Financial Benefit of Human Resource Development: Status and Update on the Theory and Practice" (Richard A. Swanson). (MN)

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ED 428 226

2 **Evaluating the Impact of HRD**

Chair: Larry Dooley, Texas A & M

The Politics of Program Evaluation and the Misuse of Evaluation Findings
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Robin Lackey, University of New Mexico

Assessing the Business Results of Management Development Using the Critical Outcome Technique at CIGNA corporation
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Lawrence J. Quartana, CIGNA Corporation
Richard A. Swanson, University of Minnesota

Investments in Intellectual Capital: Developing Methods for Measuring Impact and Value of HRD
Laurie J. Bassi, American Society for Training and Development
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ACADEMY OF HUMAN RESOURCE DEVELOPMENT

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CE 078 256

The Politics of Program Evaluation and the Misuse of Evaluation Findings

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For nearly 40 years, the HRD field has relied on the use of a particular taxonomy for writing about, and conducting, evaluations of learning and performance efforts. Most of this work, however, has been done in an a-theoretical mode. As a result, HRD professionals have failed to consider the political and ethical implications of evaluation practice. In this paper we discuss the status of evaluation theory, evaluation as a political activity, and the findings from a survey on evaluation use and misuse.

HRD evaluation is at a crossroads; it can either take advantage of what other disciplines have learned about program evaluation and use it to facilitate significant learning and performance change, or it can continue to limp along contributing little to organizational effectiveness. HRD researchers and practitioners must become better skilled in evaluation theory and practice so that they can help organizational members understand the value of evaluation and the role it can play in organizational decision-making processes.

For more than 40 years, HRD evaluation has operated in an a-theoretical mode, relying on a patchwork of methods and designs with little attention paid to the plethora of variables that effect HRD's effectiveness, the context in which HRD interventions occur, and the values and politics intrinsic to evaluation practice. This paper argues that evaluation is a values-based, political activity that often leads to the misuse of evaluation processes and findings. As HRD researchers and practitioners begin to develop and integrate a meaningful theory of evaluation into HRD practice, the application of knowledge gained from evaluators regarding the political misuse of evaluation findings is essential.

Research Questions

The study reported in this paper was guided by the following research questions:

1. What is the status of HRD evaluation theory?
2. In what ways is evaluation a political activity?
3. How do evaluators define misuse?
4. To what extent is intentional and unintentional misuse, and nonuse a problem today compared with ten years ago?
5. What evaluation use issues will continue to challenge HRD evaluators in the coming years?

Research Design

To answer the research questions, we used a mixed-methods design. Answers to the questions about evaluation theory and politics were addressed through a review of the HRD evaluation research literature (Hilbert, Preskill and Russ-Eft, 1997). A review of the evaluation theory literature was also conducted.

The second method was a survey conducted with American Evaluation Association North American members of the Evaluation Use topical interest group (N=526). The survey was developed by experts in the field of evaluation who had written extensively on the subject of evaluation use. A core set of open-ended questions regarding evaluation use and misuse was generated by the team and subsequently modified through a series of iterations over a two-month period. The survey instrument was pre-tested with seven practicing evaluators whose backgrounds

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represented a diversity of evaluation experience. Two mailings plus a follow-up to non-respondents resulted in a 54% (n=282) return rate.

The survey data were entered into Pulsesurvey, an analysis program by Scantron, for the purpose of generating descriptive statistics. The data were then transferred into an SAS program so that cross-tabulations could be conducted for several survey items and contextual variables that distinguished respondents. Qualitative data from the open-ended questions were entered into the Data Collector analysis program. A process of content analysis was then used to categorize and code the data. Tests of inter-rater agreement (between the authors) assured that the data were being coded reliably.

Findings

The findings are presented in terms of theories of evaluation, evaluation as a political activity, and the survey results.

Theories of Evaluation and HRD The review of the HRD evaluation literature reveals that the vast majority of the evaluation "models" offered over the last 40 years are not grounded in a philosophy or theory of evaluation. The most prominent example of this is Kirkpatrick's four level model for the evaluation of training (1959 a, b, 1960, a, b), which has been the focus of conceptualizing and practicing HRD program evaluation for nearly four decades. Kirkpatrick suggested that to simplify training evaluation, trainers should evaluate their programs according to four levels: 1) participants' reactions, 2) participants' learning, 3) participants' behavior changes, and 4) business results.

In the literature, Hilbert et. al., 1997, found 57 journal articles describing or mentioning evaluation model published between 1959 and 1996. Of those, 44 (77%) included Kirkpatrick's model (either alone or in comparison with another model). Only thirteen articles discussed a model other than Kirkpatrick's. Most of these models attempt to measure some aspect of participants' reactions, motivation, learning, knowledge and skill transfer, financial results and general organizational impact. Most, however, are not true models that suggest hypotheses, relationships between variables, or are testable in ways that would produce generalizable results. Instead they tend to be taxonomies or classification schemes that offer trainers a framework for evaluating training programs. None of these models address the ethics or politics of evaluation practice.

Unfortunately, the evaluation taxonomies and frameworks offered over the last 40 years tend to position evaluation as a periodic event that is the sum of a set of technical skills and activities focused on a narrow set of variables using a limited number of designs and methods. As Shadish, Cook and Leviton (1995) have warned, "Armed with only methodology, the evaluator is ill prepared to cope with the harsh realities of social programming and policy, and can produce evaluations that are not used or are politically naive" (p. 183).

One of the problems in not having a theory of HRD evaluation is that we fail to consider critical environmental variables when commissioning, designing, and implementing an evaluation and then using its findings. A theory of HRD evaluation should encompass a body of knowledge that describes, predicts, explains, and adds understanding to that which is being evaluated. Evaluation theory describes and justifies why certain evaluation practices lead to particular kinds of results across situations that evaluators confront. A theory of HRD evaluation would build on general evaluation theory but would place it within a learning and performance context of organizations. Such a theory would take into account five theoretical bases: a) a theory of knowledge, b) theory of practice, c) theory of use, d) theory of social programming, and e) theory of valuing (Shadish, et al., 1995). Finally, an HRD evaluation theory would also be based on a logic of evaluation that involves, 1) determining criteria of merit, 2) constructing standards of merit, 3) measuring how well performance of the evaluand compares to these standards, and 4) synthesizing and integrating data into a judgement of merit or worth (Scriven 1980). However, at the current time, there is no HRD evaluation theory that is founded on the theoretical bases or any logic of evaluation practice.

Evaluation as a Political Activity

One set of variables that needs to be considered in any theory of HRD evaluation is that set associated with the politics and ethics of evaluation practice. While early evaluators (1960's) attempted to ignore the role of values in evaluation, it soon became apparent that this was imprudent, if not impossible (House, 1993, Shadish, et al., 1995). Given that programs themselves are outcomes of political decisions which are values-based, there is no such thing as a program that is value-free. Likewise, decisions that shape approaches to training and learning in organizations are also inherently values-based and political in their motivation and their results.

Evaluation is intrinsically a political activity; its affect on programs and organizations can be both positive and negative. Politics refers to the interactions of various actors within and among bureaucracies, clients, interest groups, private organizations and legislatures as they relate to each other from different positions of power, influence, and authority (Banner, Doctors and Gordon, 1975, p. 2). Evaluation practice becomes political because (Weiss, 1987):

1) Power and programs are themselves creatures of political decisions. For example, the choice made over the last several years to implement Total Quality Management (TQM) courses in organizations is as much a political decision as it is an economic one.

2) Because evaluation is undertaken to feed into the decision-making process, its reports enter the political arena. This includes using the findings to pursue a political agenda, to support one's ideas, or to lobby for resources.

3) Evaluation itself has a political stance by virtue of the fact that the judgments one renders about a program have the potential impact for the reallocation of power and resources. Decisions to expand particular training programs to the field, or to terminate portions of programs to a segment of employees, are political determinations.

Given the political nature of evaluation, evaluation processes and results can sometimes be misused by a variety of stakeholders. In the next section of this paper we describe the results of survey questions on misuse that have a direct relationship to the politics of evaluation practice.

Evaluation Use and Misuse

The Program Evaluation Standards (1994) are a testament to the importance the evaluation field places on the proper and ethical conduct of evaluators, and on the appropriate use of evaluation processes and findings. The construct of misuse is multidimensional and has received considerable attention in Stevens and Dial's (1994) New Directions for Program Evaluation. The need for methods to address ethical issues and the implications underlying evaluation is even more critical today given the changing landscape of how evaluation is increasingly being carried out in complex, political, dynamic organizations.

Findings of American Evaluation Association Survey: Evaluation Misuse

The survey results reported here are those findings specifically related to the topic of evaluation misuse, from a mailed survey to North American Evaluation Use TIG members conducted in 1996 (Preskill and Caracelli, 1997). The survey was mailed to 478 U.S. and 52 Canadian evaluators (N=526). We received responses from 282 TIG members (54%). This paper includes responses to two closed-ended questions and four open-ended questions from this survey.

Status of Non-use, Unintentional and Intentional Misuse Survey respondents who have been practicing evaluation for more than ten years (n=193) believe that the non-use of evaluation findings is much less of a problem today than it was ten years ago. However, respondents perceive little change in the intentional and unintentional misuse of evaluation findings over these years. Then and now, the majority of respondents rate these occurrences as a minor problem. However, nearly about a quarter of the respondents continue to perceive misuse as a major problem.

Definitions of Misuse The question, "How do you define misuse?", elicited 196 responses. The definitions provided by respondents resulted in nine categories that were classified as relating to Misuse, Non-use, or Misevaluation:

1. To Distort, Manipulate and/or Intentionally Misinterpret Findings
2. To Draw Unjustified Conclusions - To Go Beyond the Data
3. To Withhold or Selectively Use Evaluation Findings
4. To Punish or Reward Program Staff
5. To Terminate a Program or Justify Firings or Layoffs
6. No Intention to Use
7. Misuse at the Evaluation's Commissioning
8. Misuse During the Evaluation's Design
9. Misuse During the Evaluation's Implementation

In the sections that follow we describe these classifications and their subcomponents, and provide illustrative examples of each.

Misuse of Evaluation Findings Almost all of the respondents to this question (n=180) provided definitions of misuse that addressed instrumental misuses of findings; that is, the intentional and immediate wrongful or inappropriate application of evaluation findings. Many of the definitions suggest that clients misuse evaluation results in order to pursue a personal or political agenda and/or to support a preexisting bias. The underlying motivation embedded in many of the definitions is deception. For example:

- Intentionally distorting findings or processes for personal and/or political gain.
- Adjusting the description of evaluation findings to meet decision maker's agenda.
- Skewing the results to fit a division or agency's particular agenda.
- "Editing" results to fit a mind set and personal agenda.
- Misinterpreting the results or using only certain results to prove a point while ignoring the complete picture.

Six of the nine categories of definitions relate to instances of misuse, as follows.

1. To Distort, Manipulate and/or Intentionally Misinterpret Findings. The most common definition of misuse provided by 56% of the survey respondents (n=101), can be characterized as the distortion, manipulation, and intentional misinterpretation of evaluation findings. The particular instances of this type of misuse involve the following actions taken by the evaluation sponsor or client:

- Drawing incorrect conclusions
- Changing or reinterpreting evaluation results
- Making false claims
- Reporting findings out of context
- Distorting the results to make findings seem more or less favorable
- Manipulating or skewing data and/or findings
- Deliberately misinterpreting findings

2. To Draw Unjustified Conclusions - To Go Beyond the Data. Thirty-three respondents (18%) define misuse in terms of the client over interpreting data, generalizing findings too broadly, assigning causation where there is none, ignoring a study's limitations or caveats, and leaping from data to action (taking action on incomplete data or actions not supported by the findings). Definitions in this category include:

- Jumping to unsupported conclusions about causality
- Inappropriate generalization of results
- The application of evaluation findings or recommendations in a manner not supported by the design, intent, or data
- Drawing and acting upon conclusions that are clearly not supported by a careful examination of the evidence collected during an evaluation study

3. To Withhold or Selectively Use Evaluation Findings. In addition to the direct distortion, manipulation, or misinterpretation of findings, respondents defined misuse as intentionally withholding or selectively using findings. In this category findings are not misinterpreted by the client, but the client's selective use of findings may lead decision-makers to misinterpret and thus misuse the evaluation results in their decision making processes.

Respondents' examples (n=50, 28%) suggest that the picking and choosing of data or recommendations from a final report occurs when the findings are counter to the clients' beliefs and interests, or when the sharing of particular findings support a predetermined position. When this happens, negative information is suppressed or particular findings are ignored or hidden.

- Stakeholders select some results for decision-making without considering other results
- Selective use to support predetermined conclusion or course of action
- Selection of findings for public dissemination that conform to desired outcomes, while hiding or burying negative results
- Omitting relevant findings of the evaluation so that only the findings which support an independently reached conclusion are presented
- When stakeholders knowingly pick and choose data to report on the basis of "as needed" or "for convenience" for their own agenda -- Fueled by self-serving motives
- Submitting only a part of a full evaluation report to funders of a program

4. To Punish or Reward Program Staff. Of the eleven responses (6%) in this category, ten were examples of misuse where program staff is punished, verbally attacked, or labeled as ineffective. Only one definition of misuse in this category related to rewarding staff inappropriately:

- Using evaluation results to punish staff rather than using it in the context of positive organizational change
- Using negative results as a means to attack a group or person
- When evaluation results are used to punish service providers
- Rewarding organizations or individuals contingent upon meeting narrow performance targets

5. To Terminate a Program or Justify Firings or Layoffs. Ten respondents (6%) believe that misuse also applies to cases where evaluation findings are used to inappropriately terminate or cancel a program, to fire individuals and/or to justify layoffs. Some of the definitions of misuse in this category include:

- To terminate or substantially amend a program that is relatively successful as evaluated
- Management using evaluation results to support unpopular decisions, such as layoffs of staff, cost-cuts to programs
- Eliminating personnel/funding/program
- Using evaluation as a guise to gain control, dismiss employees, write own agendas

6. Non-use of Evaluation Findings - No Intention to Use. Seven respondents (4%) provided definitions of misuse where stakeholders fail to acknowledge the evaluation results, where individuals lose interest in the evaluation or where an evaluation report is not read or the findings considered. These definitions include:

- When the true results of the evaluation are not acknowledged
- Evaluation projects that are launched and later shelved with no accompanying action
- "Benign neglect" of evaluation outcomes

In addition to defining misuse in terms of the evaluation findings, 22% of the respondents (n=40) provided 38 different definitions that focus on misuse during the evaluation process. This category pertained to *misevaluation*; three subcomponents were identified: 7) misuse at the evaluation's commissioning, 8) misuse during the evaluation's design, and 9) misuse during the evaluation's implementation.

7. Misuse at the Evaluation's Commissioning. Seventeen respondents identified instances of misuse that occur at the inception of the evaluation study. These instances are usually attributed to the clients' or stakeholders' actions. Typically the request to conduct an evaluation is for symbolic purposes and there is no intention to use the results. In these cases, an a priori decision was made to use evaluation process or findings as a means to legitimize decisions already made, as a ritual, and as a means for covering up one's mistakes. Examples provided by the respondents include:

- Trying to prove a point by selecting the right evaluator

- Redirecting evaluation resources away from topics that are important yet controversial
- Deciding to evaluate to only placate articulated mandates for evaluation
- Using the process to legitimize something without using the results
- When evaluation is implemented for "window-dressing" and is not incorporated into organizational learning

8. Misuse During the Evaluation's Design. Ten more of the 40 respondents in this misevaluation category provided definitions of misevaluation that occurs during an evaluation's design process. This type of misuse is typically attributed to the evaluator but could involve the client's actions as well. These include:

- Discounting the evaluation design
- Any activity that fails to follow the guidelines found in the evaluation standards including poor design
- Designing bias in surveys
- Designing instruments and measures that are altered to yield the desired data and exclude information of importance to stakeholders

9. Misuse During the Evaluation's Implementation. An additional 24 of the 38 definitions in this category describe misuse in relation to an evaluation's implementation and are typically related to the evaluator's actions during the evaluation's implementation.

- Inappropriate or inaccurate information gathering, interpretation, formulating alternative scenarios for action
- Manipulating processes to bias results systematically
- Breaching ethical standards - e.g., promises of anonymity
- Intentionally excluding key stakeholders from the evaluation process/results
- Any activity that fails to follow the guidelines found in the evaluation standards including poor design, selective findings, biased approaches, inappropriate statistical applications
- Statistical manipulation to meet the needs of the evaluand's political agenda

Experiences With Misuse Respondents were asked, "How often have you personally experienced instances of evaluation misuse?" Using a four-point scale (frequently, sometimes, rarely and never), 10% of the respondents reported experiencing instances of evaluation findings being misused "frequently" and 43% experience misuse "sometimes". Just over one-third of the respondents "rarely" experience misuse of evaluations findings (34%) and 13% said they never experience the misuse of evaluation findings. It is interesting to note that beginning evaluators were much more likely than intermediate and advanced evaluators to say they had never experienced the misuse of evaluation findings.

Continuing Challenges Regarding Misuse We were also interested in learning what respondents saw as examples of misuse they believe will continue to challenge evaluators in their practice. Of the 282 respondents, 117 (41%) provided answers to this question. Of the 117 responses, 112 (96%) of the challenges are associated with the definitions of misuse, non-use and misevaluation described earlier:

- To support a preexisting or predetermined position (n=21)
- To withhold or selectively use findings (n=20)
- Misevaluation of evaluation implementation process (n=17)
- To draw unjustified conclusions (n=13)
- To distort, manipulate, and/or intentionally misinterpret findings (n=13)

Changes in the Field of Evaluation: Use and Misuse We were interested in knowing what kinds of changes Evaluation Use TIG members are seeing in the evaluation field over the past ten years. Respondents were asked to consider changes they considered to be 'progress', and changes they view as undesirable or negative. While respondents provided many different examples, we limit our reporting here to those responses that address changes regarding use and misuse.

Changes Perceived as Progress Over two-thirds (n=135/67%) of the survey respondents answered this particular question. From their responses, fifteen categories were developed. Of these fifteen, six relate to evaluation use and misuse.

Nearly half (n=46%) of the respondents to this question believe that increased stakeholder involvement in evaluations is evidence of progress. They think that evaluators are developing closer contact with stakeholders, involving a greater diversity of stakeholders, and are more willing to involve targeted users. Eight respondents specifically mentioned collaborative, participatory and empowerment evaluation approaches as an important means for increasing stakeholder involvement.

Increased client interest in evaluation and their increased understanding of the role of evaluation was also viewed as progress by 21% (n=29) of the respondents to this question. Many trust that evaluation is becoming increasingly institutionalized and is being seen as a means for adding value to an organization.

Nineteen (14%) respondents also believe that planning for use is becoming more common and is a sign of progress. These evaluators think stakeholders are developing a greater understanding of use issues, are becoming more sophisticated about use and misuse, and are wanting to disseminate findings more often. In addition, nine respondents (7%) are seeing more stakeholders who are viewing evaluation as a tool for learning. These respondents note that evaluation is increasingly being considered part of an organizational learning process. Seven (4%) respondents think there is currently more attention being paid to evaluators' ethical behaviors, which serves to lessen the likelihood of misuse. Six (4%) respondents think progress is being made in viewing evaluation use as process use, whereby stakeholders learn as much from the evaluation process as they do from the findings.

Changes Perceived as Undesirable or Negative Of the 282 survey respondents, 101 (36%) provided responses to this question. Twelve categories emerged from their comments of which three (n=21/21%) relate to evaluation use and misuse.

Nine (9%) of the respondents are observing an over-reliance on making decisions based on statistical results and going beyond what the data indicate. This involves rejecting conclusions due to a lack of statistical significance, over-generalizing findings, and using cost-benefit data that may not be valid indicators of program outcomes. Eight (8%) respondents expressed concern that evaluations are being used more frequently to terminate a program, to obtaining funding without intention to use the results, or as a means to distort the truth. And, four (4%) of the respondents note an increase in evaluators' willingness to slant the results to what they think the stakeholder wishes to hear, or administrators using formative results to make summative judgments.

Conclusion

In this paper we have tried, in a very brief space, to argue that the HRD field lacks a theory of evaluation that addresses the politics and ethics of evaluation practice. The survey findings on misuse confirm what Carol Weiss said nearly 25 years ago: "Many of the problems that still bedevil the evaluation enterprise are not so much failures of research expertise as they are failures to cope adequately with the political environment in which evaluation takes place" (1973, p.179). It is important for HRD researchers and practitioners to understand that evaluation is political by default in that it deals with programs that are themselves creations of political decisions that develop loyal constituencies and compete for survival. Given that evaluation is most often conducted to feed into the decision-making process, its reports enter the political arena. More than two decades later, evaluation continues to be a political enterprise, but the political nature of evaluation has not yet become part of the scholarly conversation in the HRD field.

As a result of our scan of the state of HRD evaluation, we propose the following for HRD researchers:

1) Develop a research agenda that moves beyond the constant tweaking of taxonomies, toward exploring the development of an HRD evaluation theory that takes into account the inherent politics of evaluation practice.
2) Incorporate a model of ethical thinking into an HRD evaluation theory to guide HRD evaluators' work, that addresses ethical principles such as respecting autonomy, avoiding undue harm, doing good, being fair, and being faithful. (Kitchener, 1984; Newman and Brown, 1996).

3) Engage in a series of research studies that explore how the results of evaluation studies are being use and/or misused.

For those of us who wish to continue professionalizing the HRD field, and HRD evaluation in particular, we would do well to consider Scriven's (1994) warning: "The absence of theory is terribly costly; different fields have reinvented the wheel or, worse, failed to do so; fundamental errors exist in many common evaluation procedures because of the failure to look at their logical foundations..."(p. 379).

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Assessing the Business Results of Management Development Using the Critical Outcome Technique at CIGNA Corporation

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The purpose of this case study is to describe, in detail, the utility of the Critical Outcome Technique (COT) in evaluating a management development program at CIGNA Corporation. This field study application of the COT further established it as a practical and useful evaluative technique; however, it was determined that the COT process requires further development to increase its overall effectiveness.

In a previous iteration of validation research on the Critical Outcome Technique (COT), application of the technique to thirteen different HRD programs was briefly described (Swanson & Mattson, 1997). The present paper provides an in-depth description of the application of the COT to one specific management development program at CIGNA Corporation. Additionally, key learnings from this application and necessary revisions to the technique are discussed.

Organization Profile

CIGNA Corporation is a multi-line insurance carrier and financial services company with $19B in annual revenues and $99B in assets. Headquartered in Philadelphia, it is one of the oldest insurance companies in America, officially organized in 1792 by merchants meeting in Independence Hall. Training functions within the company reside at the corporate level as well as in each of eight separate lines of business.

HRD Program Description & Delivery

Management throughout the various lines of business at CIGNA have recognized the importance of supporting newly appointed managers in the early part of their management careers. A critical part of this support has consisted of a training program designed to build the knowledge and skills necessary to succeed as a manager in the company.

Essentials of Management (EOM) is a three day introduction to *basic* management concepts and skills. It is sponsored and delivered by the corporate training function and is targeted to the new manager with six to eighteen months of experience.

The program was developed in response to a widely felt need among the HR community to support the target population, the majority of whom had little or no formal training in management. EOM was first offered in January, 1996 and has been run on a continual basis since, both in the home office in Philadelphia as well as at multiple field locations. This basic program is mandatory for managers in the target population across all lines of business as well as staff functions.

The format of the program consists of short lecture, small group discussions, skill practice, reflective writing, and question and answer. Components of EOM include: the role of the manager, communication skills, conflict management, feedback, Myers-Briggs instrument, delegation, coaching, and motivation.

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Key Evaluation Issues & Events

Prior to this effort, evaluation of EOM in 1996 consisted of post-program reaction evaluations and surveys of participants and their managers ten weeks after the program. Post-program reaction evaluations indicated that over 90% of the participants believed that the program "Mostly Met" or "Fully Met" the stated objectives of the program. High levels of satisfaction with the program were reported by the participants as well. Satisfaction levels remained high in the results of the participant surveys administered ten weeks after the program.

Post-program survey results indicated that over 90% of the participants believed that the program was a significant factor in causing them to implement the skills and knowledge addressed in the program when they returned to the job. In addition, over 90% of the participants' managers reported that they believed that their employees' participation in EOM was a significant factor in on the job implementation of knowledge and skills.

Anecdotal data from both participants and their managers were offered that supported the findings of high satisfaction and the belief that the program significantly influenced on the job implementation of the knowledge and skills addressed in the program.

While the data collected were somewhat useful, analysis revealed only broad descriptions of on-the-job performance and business outcomes. In examining this data, some other critical questions that arose were:

- Is there a method to more precisely describe validated on-the-job performance?
- Is there a method that will describe validated business outcomes of the program?
- Is there an evaluation method that will control for the effects of intervening variables, e.g. participant motivation, participation readiness, environmental support, additional HRD initiatives, etc.

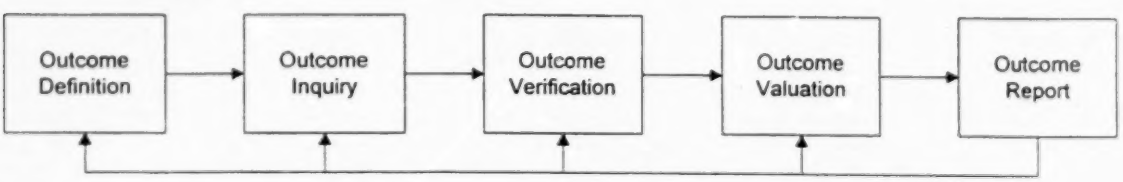
Consideration of these sorts of questions in corporate settings led to the original development of the Critical Outcome Technique and to its adoption by the CIGNA training team to assess the effectiveness of the 1997 EOM program offerings.

The Critical Outcome Technique

The Critical Outcome Technique is a practical evaluation system that can be applied to any performance improvement or human resource development (HRD) intervention (Swanson & Mattson, 1997). While most scholars and practitioners agree that evaluation should be an integral part of the program analysis, design, development, and delivery, in practice this is often not the case (Bassi, Benson, & Cheney, 1996; Swanson, 1996). The COT was developed as a means of assessing program effectiveness in a systematic, post-hoc manner.

The COT is a process model; it contains five steps which comprise the outcome assessment process. General descriptions of these steps can be found in Swanson & Mattson (1997). The following section describes the application of the model to the Essentials of Management program.

Figure 1. Model of the Critical Outcome Technique



Implementation of the COT at CIGNA

Implementation of the COT for Essentials of Management followed the five steps of the process in order:

Outcome Definition This part of the process specifies the intended critical outcomes of the program. Put simply, the key question in this phase of the process is: "What were we trying to do?" In the case of EOM, the intended outcomes, according to the designers of the program, were to develop skills in the areas of:

- Coaching employees for improved performance

- Providing developmental, constructive feedback
- Delegation
- Motivating staff
- Communicating expectations and managing results
- Managing conflict
- Handling difficult employee situations
- Accommodating differences in individual styles

The scope of EOM is broad in order to accommodate the diversity of needs of the targeted participants: new managers with 6 - 18 months of experience. There was no expectation that participants would leave the program with a highly developed set of skills in each of the intended outcome areas. Rather, the overarching goals of the program were to define for the participants just what it is that managers in the company are expected to do as well as to provide baseline management skills in core management practices. Thus, any application back on the job of a skill or set of skills acquired during the course of the program was considered as an achievement of an intended outcome. To define the critical outcomes for EOM, the assistant director for training and development reviewed the course objectives for the program, searching for the most specific information regarding desirable outcomes.

Outcome Inquiry The main question in this phase is, "What were the actual (as opposed to the intended) outcomes of the program?" The source of data for this phase are the program participants. Because the participants in EOM came from all areas of the company and from a variety of locations around the country, the most expedient method for collecting data was through an e-mail survey (see Figure 2 below). The use of e-mail for data collection made the data collection process simple and relatively easy to do. One person was able to send surveys to 100 participants in less than two hours. Surveys were returned via e-mail within 72 hours of being sent. The response rate was 40%.

Figure 2. Participant Survey Instrument

Training Follow-up Survey
Corporate Training & Development
ESSENTIALS OF MANAGEMENT

Corporate Training & Development is interested in knowing how well you have been able to take what you learned in this course and put it into practice back on the job. Would you please take a minute to complete this brief survey? We would appreciate your response by: _____. Thank you for your time.

Dates of program attended:

1. Please check the skills or learnings you have put into practice back on the job since attending this program:

__ Feedback __ Delegation __ Meyers-Briggs __ Coaching __ Motivation
__ Conflict Management __Other

Please provide a specific description of how you applied this skill or learning on the job:

2. Please check the statement that best describes the outcome you have achieved by putting into practice the skills and learnings you described above.

__ Increased productivity - please describe this result and the dollars gained by the increase.

__ Process improvement - greater efficiency, faster turnaround, better customer service. Please describe the improvement and specify dollars saved.

__ Decreased turnover - You retained an employee you were expecting to terminate or demote. Please specify dollars saved by not hiring a new employee.

__ Other - please describe and specify dollars saved.

Outcome Verification There are two main questions in this phase of the COT process: (1) "Did the outcomes really occur as reported by the participant?" and (2) "Would the outcomes have occurred without the program?"

To answer the first question, we consulted the program's stakeholders. In this case, the stakeholders were the managers of the participants. These managers are responsible for holding the participants accountable for how well they manage and supervise; as such they have direct motivation for observing the participants back on the job to assess the extent to which new skills are being put into practice.

To collect data from participant managers, an e-mail survey similar to the one used for the participants was developed and sent to the managers of 100 participants. A response turnaround of 72 hours was again requested; the response rate was 30%.

To answer the second question, evaluators conducted in-person interviews with managers of groups of employees who attended the program as well as HR representatives of selected business units where the participants work. The goal of the interviews was to determine what organizational dynamics may have influenced the participants' perception of the impact of EOM, (e.g. attendance at similar programs around the time they attended EOM, halo effect, environmental factors that reinforce or inhibit use of the skills addressed in the program, etc.). Results of the interviews indicated that there was no single factor identified that had a unilaterally significant effect on outcomes produced by the application of EOM skills.

Outcome Valuation The primary question in this phase is, "How much are these outcomes worth?" In the case of EOM, the program's intended outcomes are management behaviors whose effect on business outcomes are secondary, tertiary, or beyond. For instance, coaching an employee effectively may improve a specific aspect of that employee's job performance. In turn, the improved job performance may effect a chain of actions that ultimately bear upon business results. Management behaviors are part of a complex network of factors that influence business outcomes. While there is widespread agreement that skilled managers are critical to business success, attributing the practice of a specific management behavior to a specific business outcome is a difficult judgment. Participants in EOM and their managers were given the option to describe business outcomes of participation in the program in terms of (1) Productivity improvement, (2) Process improvement, or (3) Decreased turnover. The surveys asked the participants to estimate the dollars saved or realized using their best judgment. Participant managers were asked, both via survey an in-person interviews, to verify the dollar figures reported by the participants.

Outcome Report The actual outcome report is presented in Figure 3. The report was designed for the primary stakeholders of the EOM program: senior HR management, the training team, and HR professionals who need to assess training needs of groups and individuals in their respective business units. The report summarizes the outcomes in abbreviated and narrative forms.

Results of the Implementation of the COT at CIGNA

The Outcome Inquiry phase yielded information that strongly indicated that participants in EOM left the program and made good faith efforts to implement the skills addressed in the program back on the job. Data addressing the level of on the job implementation of feedback and delegation were particularly strong: 89% and 62% respectively. Usage percentages in the remaining skills ranged from 54% to 46%. Given, as described in the Outcome Definition section, that any application of these skills back on the job would be considered an achievement of intended outcomes, the data from the program participants indicate that such an achievement took place. Outcome Verification data from participant managers provided a second perspective on the job skill applications that was generally consistent with the implementation levels provided by the participants. The results suggested that skills that were presented in a highly structured format (feedback, delegation) were more likely to be reported as implemented than those presented more conceptually.

Evaluation team members reported that assigning dollar values to skill implementation was difficult. In some isolated cases, specific dollar savings were estimated based on savings from the elimination of turnover. These dollar figures were based on established company costs associated with hiring and training a new employee. Participants also identified additional outcomes that do not have an assignable financial value, but do secondarily affect business outcomes, e.g. better morale, better time utilization. Other business outcomes were reported that, in principle, have an assignable financial value, but there was insufficient data available to accurately specify a dollar figure, (e.g. better time utilization, backlog reductions, quality improvement). One exception included a

Figure 3. Critical Outcome Evaluation Report for Essentials of Management

Program: "Essentials of Management"
Dates: 1997
Participants: 90 Managers

Program Description:
"Essentials of Management" is an intensive three-day program introduction to basic management concepts and skills. It is sponsored and delivered by the corporate training function and is targeted to the new manager with six to eighteen months of experience. The program is mandatory for managers in the target population across all lines of business as well as staff functions.

Outcome Summary:
In summary, the 1997, "Essentials of Management" programs were very effective. See page two for a further breakdown of these results and contact Lawrence Quartana if you wish additional information.

OUTCOMES	OUTCOME VALUE
Cost Savings attributed to application of communication skills	$188,000
Cost Savings attributed to turnover reduction	$20,000
Improved time utilization	Significant improvement
Improved quality of claims processing	Significant improvement
Improved production, decreased rework, backlog reduction	Significant improvement

Stakeholder Distribution List:
- President
- Sr. V.P. of Sales & Mktg.
- V.P. of National Accounts
- V.P. of HRD

PROGRAM OUTCOMES

Source of Data: Program participants

Reported Outcomes: Participants reported active implementation of skills learned in the program back on the job. The percentage of participants who reported implementing each skill is: Feedback 89%; Delegation 62%; Coaching 54%; Conflict Management 46%; Motivation 46% 98% of participants reported implementing at least two skills on the job.

VERIFIED PROGRAM OUTCOMES

Source of data: Participant's managers

Verified outcomes: Management gave explicit verification of $188,000.00 in cost savings that resulted from application of communication skills addressed in the program.
Management was rarely in a position to directly observe application of skills learned in the program. Management was able to observe the outcomes of skill implementation. Outcomes observed include: Increased confidence, improved morale, reduced stress, and reduced overt conflict
Management was unable to verify or deny cost savings realized by reduced turnover.

VALUE OF PROGRAM OUTCOMES:

MONETIZED BUSINESS RESULTS:
- A cost savings of $188,000.00 directly verified by management, was realized by a specific implementation of communication skills learned in the program.
- Reduced turnover resulting in approximately $20,000.00 in savings was reported by participants; management did not report awareness of this cost savings, but it was not denied.
- Participants and managers had difficulty assigning a dollar value to most outcomes, though most expressed confidence that some business value was realized.

NON-MONETIZED BUSINESS RESULTS:
Non-monetized business results that were reported and verified included: Better time utilization, improved quality (claims processing), decreased backlog (claims processing), improved morale, and reduced rework.

significant cost savings ($188,000.00) that was specifically attributed to implementation of EOM skills. The attribution was verified by the participant's manager.

Data Analysis The analysis of data in this application of the COT was fairly straightforward. Quantitative data were tabulated by category of outcome (see Figure 3). Qualitative data, in most cases, were presented by respondents to further substantiate achievement of a given outcome (e.g., provide an example of the application of the skill).

In some instances, qualitative date were coded and categorized. For example, several managers observed the outcome of skill implementation such as conflict management. In this case the number of managers reporting specific examples was aggregated. Coding of responses was facilitated by the fact that categories of responses were supplied (see Figure 3). For responses that were not assigned a category, one was created post-hoc by the analyst. Responses which were connotatively similar (e.g., "increased confidence" and "improved self assurance") were counted and categorized together according to the analyst's criteria. This approach, albeit non-foolproof, is desirable as we lack procedures to differentially weight separate reports of outcomes (Weber, 1990).

Discussion and Conclusions

There are several overall learnings from this pilot application of the Critical Outcome Technique to the Essentials of Management program, a basic generic training program to personnel across multiple functions:

- The COT demonstrated that the intended outcomes of the program were achieved and verified by the participants' managers;
- The COT demonstrated that business outcomes attributable to participation in EOM could be identified. In some cases, plausible estimates of dollar values were possible; and
- This application of the COT achieved the goal of providing results information that is useful to program stakeholders (rather than precise measurements of total effects).

In short, the EOM program did what it was designed to do: provide participants with baseline development in core management practices. The levels of implementation of the skills addressed in the program speak not only to the effectiveness of the program's design and delivery, but also to the presence of environmental factors that encourage the use of these skills on the job.

Apart from the evaluation of the EOM program, this application of the COT lead us to several conclusions regarding its use in practice. These conclusions coincide roughly with the steps in the overall process model; however, none of these learnings are independent from one another.

In the "Outcome Definition" step of the model, the evaluation team found it difficult to discriminate between critical and non-critical outcomes as defined by the technique. It was the case in this application that several non-critical outcomes were stated as critical outcomes. Critical outcomes are actual outcomes of the application of skills or knowledge ascertained in an HRD program. Merely using a skill from a program (e.g., a feedback technique) should not constitute attainment of a critical outcome. Admittedly, there are a number of factors which affect performance outcomes. However, we emphatically note that the purpose of the COT is not to isolate precise changes in individual performance or productivity indices, rather it is a tool to help decision makers determine the general effectiveness of HRD programs.

Additionally, with this application of the COT, we have also learned to refine our data gathering techniques to get information that is more closely aligned with the COT model. In step two, "Outcome Inquiry," we learned that asking participants to cite intended outcomes did little to further our intended purpose which was to ascertain business results, or critical outcomes. Critical outcomes, as stated above, are outcomes which relate to the financial aspects of an organization such as: elimination of grievanances, reduced meeting time, reduced cycle time, reduced turnover, increased sales, etc.

With respect to step three, "Outcome Verification," getting information from the participant's managers regarding factors mitigating the application of skills learned in EOM was a difficult process. Not surprisingly, a large proportion of these managers were not used to thinking in terms of other potential causes of behavior. In order to improve our ability to refine this portion of the process, better data gathering tools will be designed. Additionally, it may be valuable to ask a sample of participants regarding factors which may have mitigated their attainment of critical outcomes in the "Outcome Inquiry" step.

With regard to step five, "Outcome Report," we believe it will be important in future applications of the COT to include a financial benefits framework (e.g., Mosier, 1990). This will help decision makers to quickly assess the value of a program in terms of outcomes relative to costs.

In conclusion, subsequent applications of the COT will be based on revised descriptions of the purpose and process of each of five process steps so as to increase the efficiency and effectiveness of the COT.

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Investments in Intellectual Capital: Developing Methods for Measuring Impact and Value of HRD

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The measurement and evaluation of intellectual capital is an issue which holds a crucial role for the field of HRD. Yet, most organizations have only a dim notion of what they spend on human capital, let alone what they receive from those investments. Evidence from a national cross-industry survey of over 500 organizations reveals preliminary, yet tantalizing evidence of a link between investments in human capital and organizational measures of performance, including market-to-book value.

According to some observers the industrial era's successor -- the information age -- is already at or past the midpoint of its life cycle. The ever-declining cost of processing information has made it ubiquitous. Indeed, information has become a commodity that is readily bought and sold. As a result, it is no longer sufficient to define competitive advantage. Hence the rapidly growing interest in intellectual capital as the "new" source of competitive advantage.

At some level, this is nothing new at all. A firm's intellectual capital -- the brains and know-how of its employees (i.e., human capital), and the processes and customer knowledge that they create-- has always been a source of competitive advantage. And by extension, so too has been human resource development (HRD) -- the processes by which a firm develops and leverages its human capital. What is unique about the era that we are entering is that intellectual capital is the only source of competitive advantage within a growing number of industries.

With the benefit of hindsight, it is apparent that in the post-industrial era, creating and leveraging intellectual capital is the business of business. By all available measures, the stock market is already providing handsome rewards to companies that successfully leverage their intellectual capital-- a phenomenon that will almost surely grow in significance as knowledge-based organizations increase in size and numbers. A few firms are anticipating this and looking to enhance, measure and manage their employees' skills and knowledge more effectively, thereby attracting the capital needed for growth.

What Isn't Measured Isn't (Well) Managed

One of the largest impediments to managing intellectual capital, especially human capital, lies in the area of measurement. Initiatives to manage human capital, on the whole, are hampered by a lack of sound methods for measuring the value and the impacts of investing in human capital. Most firms have, at best, only a dim notion of their human capital assets and investments. Standard accounting systems do not allow for easy estimation of human capital investments, even after they have been clearly identified. Sound measurement requires formalized information sharing, common definitions and metrics, and shared measurement methodologies, none of which can be overcome by market forces or the work of isolated organizations.

Measuring the value of human capital is, of course, but the first step in beginning to manage it effectively. Much more important -- but impossible if basic measurement systems have not been put in place -- is evaluating the effectiveness of alternative human capital management

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activities. Yet, we are acutely aware that most economic decision-makers know very little about the effectiveness of those activities. Two results are almost inevitable: 1) economic organizations will under-invest in their human capital, and 2) many of the investments that they do make will be ineffective.

The important point, however, is that the ultimate purpose of developing sound methods for evaluating the impacts of human capital is to generate the information needed for continuously improving its value. While such information may not be needed in an environment where spending on human capital is typically viewed as a cost, it is essential when it becomes a strategic investment.

This paper summarizes our current research on the measurement of the impact and value of human capital investments. Over the last few years, ASTD has been engaged in efforts to develop methods for collecting data on investments in workplace training and development, measuring that investment, and relating these measures to performance outcomes. We report on the findings from the first round of data collected through an ongoing national survey of training and development practices. In particular, we share results from analyses of 70 publicly traded firms to examine linkages between their human capital investments and overall company performance.

Measuring the Impacts of Human Capital

Human capital is distinct from other forms of intellectual capital in that it is the one type of capital that modern corporations cannot buy or sell. Although it may be questionable to include human capital when valuing a company's intellectual capital, it does nevertheless create value which the organization can claim. Paradoxically, despite the growing importance of human capital to firms' survival, corporate investment in human capital--such as basic skills, quality training, or funding for continuing education or professional development--is rarely measured, and little is known about the value produced by such investments.

In terms of measuring firms' investments in the creation of human capital assets, the best available evidence suggests that in 1995, the average U.S. employer spent approximately 0.9 percent of payroll on education and training--a figure that appears to have changed almost imperceptibly since 1983 (the only other year for which a roughly comparable estimate is available).[1] While corporate accounting systems contain detailed and extensive measures of investments in the areas of physical capital and research and development, and also provide methods for measuring intangibles such as corporate goodwill, human capital investments rarely appear on corporate balance sheets. And when they do appear, it is in the form of an expenditure--not an investment.

Even less attention is paid to developing measures for evaluating the effects of investments in human capital. Because of its inadequate measurement, researchers know little about the effectiveness of firms' investments in people. Equally important, corporations themselves know little about the effectiveness of these investments. Ideally, they would know what forms of training or education are most effective for different types of workers in different industries and in various situations. They would be able to measure the return on their human capital investments, as well as the effect of such investments on overall corporate performance.

Thus, while human capital investment is important to society as a whole, to individuals, and to firms, the individuals who are responsible for managing corporate investments and seeking performance improvements lack the information they need to make wise decisions on effective investments in human capital. Many are further buffeted by market forces that push them to cut "costs" like human capital investment in order to improve short-term profitability. Despite its importance, therefore, human capital investment is likely to be under-provided, with significant consequences for the economic efficiency as well as the economic well-being of employees.

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[1] See Bassi, Gallagher, Schroer (1996), page 121. This is figure is based on direct costs only. Although the inflation-adjusted total expenditure estimate increased by 18 between 1983 and 1995, the labor force grew by 19 percent during that same time period (*1996 Economic Report of the President*, page 316), suggesting virtually no change in training expenditures as a percent of payroll.

Research Review

Before describing our research on the measurement of the impact and value of investments HRD, we review how the link between the management of human capital and performance in general has been examined previously. Boudreau and Ramstad (1996) identify two distinct approaches to measuring human capital: 1) measuring the effects of individual human resource "programs" (practices), and 2) associating "bundles" of HR practices with organizational outcomes.

Studies that have examined the effects of investing in various individual human resource practices are numerous. One source of such studies is internal company research. The Adolph Coors Company found anywhere from 124% to 833% return on investment from its wellness promotion program (Bunch, 1992). McDonnell Douglas reported savings of $6 million from its employee assistance programs (Stuart, 1993). Academic studies are a second source of research on the impacts of individual practices. For example, Tepstra and Rozell (1993) found significant links between recruitment and selection procedures and firm profits. Studies specifically focused on HRD by Bartel (1995), Bishop (1994), and Russell, Terborg, and Powers (1985) have also shown relationships between such investments and either employee or firm performance.

Recently, studies which examine the extent to which human resource practices are integrated into holistic systems have also appeared which show such systems may produce greater effects than the sum of the effects of their individual practices. Research within particular industries, such as automobile manufacturing (MacDuffie, 1995) and steel mills (Arthur, 1994), as well as across broad sample of companies (Huselid, 1995) have found that those with combinations of high-involvement work practice, innovative compensation plans, team-based arrangements, and other practices perform significantly better than their peers. Huselid's research has gone so far as to quantify the effects of such practices in monetary terms.

As Boudreau and Ramstad (1996) point out, such broad studies provide little pragmatic guidance to organizational decision makers about most effective human resource practices in which to invest. They propose a taxonomy of three levels of at which one can measure investments in human capital: 1) the cost and amount of the human capital investments, 2) the immediate effects of those investments on behaviors, attitudes and capabilities, and 3) their impacts on organizational performance. Boudreau and Ramstad make a convincing case that further research on measurement move beyond the first level Having conducted research previously on measuring investments in HRD (e.g., expenditures and types of training) (Bassi and Cheney, 1996), we have recently turned our measurement research efforts in the direction of their levels 2 and 3.

Most organizations believe that workplace training and development is becoming increasing critical to their success. A recent survey by Hackett (1997) reveals that fully 97 percent of training and HR executives from Business Week 1000 companies agree that the significance of training will increase in the future. Yet, only 44 percent of those same executives report that their companies measure the value of their training. A look at their actual measures of value found that only a minority of those firms assessed training's economic value to their organization. Organizations face several obvious obstacles to conducting sound assessments of the value of their training including the sheer complexity of the question, the difficulty of identifying tangible or quantifiable outcomes, and simply the time and effort good measurement requires, just to name a few.

Data and Measures

In the spring of 1997, we administered the first round of an annual survey designed to improve the measurement of human capital investments in the form of training and development and assess their effects on performance, the Human Performance Practices Survey. This survey of a nationally representative sample of 10,000 U.S. establishments was ASTD's first attempt to implement the measurement methodologies we have developed across a wider range of corporations.

The survey focused primarily on measuring firms' investments in education and training, but also collected data on work practices, compensation policies, and subjective measures of

organizational performance on the 500 responding firms (a 5% response rate). For publicly-traded firms in the sample (N=70), we matched our data on investments with other publicly-reported corporate investments (physical capital and research and development) and objective measures of corporate performance. These data were used to identify possible relationships among firms' human capital investments and practices, other work practices, and subjective and objective measures of performance.[2]

Investments in education and training were measure in a number of ways. We collected financial data on training as a percent of payroll and training expenditure per employee for 1996 as well as the percent change in the former since 1995. We also measured the percent of employees changed in 1996 and the percent change in this figure from 1995. The final measure we included in our analyses assessed the type of training provided rather than the level. Here we chose to examine the effects of investments in training for technical skills, the fastest growing type of training today.

The full array of subjective and objective performance outcome measures included:

- *Subjective Measures* Respondents were asked to assess whether their organization's performance in 1996 was: (1) better, worse, or no different from 1995, and (2) better, worse, or no different from other organizations that do the same kind of work. Within each of these two categories, respondents were asked to assess six specific aspects of performance, including: ability to retain essential employees, employee satisfaction, quality of product/services, customer satisfaction, sales, and overall profitability. Factor analyses of these performance measures were used to construct two corresponding indices of organizational performance (one for change in performance between 1995 and 1996, and the other for the level of performance in 1996 compared to other organizations).
- *Objective Measures* For the publicly traded corporations in the sample, financial reports were used to construct the following measures for end of 1996 and for the most recently available quarter of 1997: net sales per employee, gross profit per employee, and market-to-book value.

Factor analysis was used to identify several clusters of human resource practices and create corresponding indices:

- *High performance work practices* consisting of employee involvement with management in business decisions, employee access to key business information, and self-directed work teams
- *Innovative compensation practices* consisting of profit sharing or gain sharing, group or team-based compensation, individual incentive compensation, and employee stock ownership plans.
- *Innovative training practices* consisting of train-the-trainer programs, line-on-loan or rotational training staff, training resource center, mentoring or coaching practices, individual development plans, peer review of performance/360 feedback, and training information systems.
- *Competency training practices* consisting of skill certification, documentation of individual competencies, job rotation or cross training, mandatory annual training time, and knowledge or skill-based pay.

Research Results

The data were analyzed in three ways. Using the entire sample of 500 firms, we ran correlations to examine the zero-order relationships between measures of investments in education and training, other human resource practices, and our scales of *subjective* measures of performance. Next, using the sample of publicly traded corporations, we ran correlations on the relationship between investments in education and training, other human resource practices, and the *objective* measures of financial performance in 1996 and the second quarter of 1997. Lastly, a set of

[2] Until a longitudinal data base can be developed on a sample of firms, these relationships can only be interpreted as correlational, rather than causal.

preliminary regressions (Ordinary Least Squares) was run on the sample of publicly traded firms, using the financial performance variables as dependent variables, with the education and training investment and human resource practice variables as independent variables.

Table 1 reports the Pearson correlations from the first analysis. There are more statistically significant correlations than would be expected to occur by chance. There is a significant, positive relationship between both subjective measures of overall performance and companies' use of innovative training practices, high performance work practices, and innovative compensation plans.[3] Both the percent of payroll spent on training and the percent of employees trained are positively correlated with perceived performance in 1996 compared to other organizations that do the same kind of work, but not with change in performance from 1995 to 1996. Instead, change in performance from 1995 to 1996 is positively correlated with change in training expenditure and change in the percentage of employees receiving training.

Table 1: Correlations Between Human Capital Investments and Subjective Performance Measures

	Performance Versus Others Scale	Change in Performance Scale
Training as a % of Payroll 1996	.138*	.033
Percentage of Employees Trained 1996	.098	-.047
Change in Training Expenditures 1995-6	.071	.165**
Change in % of Employees Trained 1995-6	.030	.110*
Innovative Training Practices Scale	.148**	.119*
High Performance Work Practices Scale	.144**	.138**
Innovative Compensation Scale	.127*	.103*
Competency Training Scale	.064	.025
% of Training Devoted to Technical Skills	.002	-.034

* $p < .05$; ** $p<.01$.

These results are consistent with *a priori* expectations. The *level* of training (in dollars or people should be expected to be correlated with the *level* of performance (relative to other organizations), but not the change in performance (between 1995 and 1996). Similarly, *a change* in training should be expected to be correlated with *a change* in performance (from 1995 to 1996), but not with the level of performance (compared to other organizations).

The Pearson correlations from the second analysis, between the human capital investment variables and the objective measures of financial performance, are reported in Table 2 below. Because this sample consists only of publicly traded firms that reported for their entire corporation, the sample sizes are quite small (between 35 and 55 depending on the variables under consideration).

[3] The correlation between the competency training practices scale and the two indices of organizational performance were not statistically significant.

Table 2: Correlations Between Human Capital Investments and Objective Performance Measures

		1996			1997	
	Market-to-Book Value	Net Sales/Employee	Gross Profit/Employee	Market-to-Book Value	Net Sales/Employee	Gross Profit/Employee
Training as a % of Payroll 1996	.431**	.073	.038	.370*	.091	-.019
Training Expenditure per Employee	.319*	.189	.196	.201	.249	.172
Percentage of Employees Trained 1996	.259	.115	.210	.324+	.053	.009
Change in Training Expenditures 1995-6	-.128	.131	.143	.030	.149	.143
Change in % Employees Trained 1995-6	-.316	.250	.113	-.227	.078	-.018
Innovative Training Practices Scale	.066	-.025	.161	.121	.064	.085
High Performance Work Practices Scale	-.028	-.121	-.030	-.065	.037	.147
Innovative Compensation Scale	.142	-.001	.210	.015	-.080	.014
Competency Training Scale	-.013	.026	-.168	.140	-.152	-.257
% of Training Devoted to Technical Skills	.554**	.139	.302+	.707**	.185	.276

+ $p < .10$; * $p < .05$; ** $p < .01$.

Given these very small sample sizes and the range of industries represented, it is not surprising that there are few significant correlations. None of the human resource practices scales (innovative training, high performance work, innovative compensation, quality initiatives, or competence training) was significantly correlated with any of the three financial outcome variables. Interestingly, however, both training as a percentage of payroll and training expenditure per employee were significantly, positively correlated with 1996 market-to-book value. In addition, training as a percent of payroll and the percentage of employees trained were significantly correlated with 1997 market-to-book value (although the latter significance level was marginal). We also find evidence that high market-to-book values correspond to greater investments in technical training.

These are, of course, only correlations. They neither control for other relevant factors, nor prove causality. What is surprising about these correlations, however, is that the training variables achieve statistical significance when other variables (e.g., innovative compensation and high performance work practices) which have been found to be significant by other researchers, are not significantly correlated with financial outcomes.

To isolate the relationship between these human capital investments and market-to-book value, the only outcome with significant zero-order correlations, we ran a series of Ordinary Least Squares regressions. Unfortunately, sample sizes get even smaller, because many observations do not have a complete set of variables for all of the human resource practices. Table 3 reports on a coherent set of regressions of market-to-book value in 1996 and 1997 on the significant correlates identified above (to maximize the N). We also included a control for the durable manufacturing industry which was also found to be highly correlated with market-to-book value in preliminary regressions.

It is of interest that neither measure of the *amount* of human capital investment are significantly related to market-to-book value in 1996 or 1997. Rather it appears that the *type* of training investments made is a more critical determinant of this measure of an organization's intangible assets (as perceived by the market). Firms that provide relatively more technical

training than other types of training tend to report higher market-to-book values. Moreover, the percent of technical training has an even larger effect in 1997, suggesting that it's effects on market-to-book value may be lagged by a year or more, and may grow over time.

A third regression, which controls for the 1996 market-to-book value as a predictor of the 1997 value, reveals a great deal of endogeneity. Yet, even in this analysis, percent of technical training retains a highly significant positive effect. This finding, while not conclusive, suggests that the type of training *by itself* in one year may enhance a company's market-to-book value the next year. To show such a causal relationship conclusively, however, requires more data than we currently have at our disposal, both in terms of sample size and years of data. For instance, we cannot rule out the possibility that other factors, such as new leadership, prompted firms to provide more technical training at the same time it enhanced their market-to-book values.

Table 3: Regressions of Market-to-Book Value on Human Capital Investments[a]

	Market-to-Book Value 1996	Market-to-Book Value 1997	Market-to-Book Value 1997
Percentage of Employees Trained 1996	.038	.079	.072
Training as a % of Payroll 1996	-.023	-.016	-.022
% of Training Devoted to Technical Skills	.376*	.656**	.424**
Durable Manufacturing	.469*	.174	-.161
Market-to-Book Value 1996			.664**
R-Square	.538	.600	.815
Adjusted R-Square	.441	.519	.764
F	5.542**	7.485**	15.869**

* $p < .05$; ** $p < .01$.
[a]Standardized coefficients shown.

Summary

Clearly, our research results thus far are preliminary, yet tantalizing. We have found evidence that indicates a possible link between organizational investments in human capital and one organizational measure of performance. While previous research has uncovered relationships between such investments and organizational performance, this evidence suggests that the market itself and stakeholders also recognize the value they generate. That value may not show up in the next quarter's financial results, but will contribute to the longevity and long-term success of the organization as it continuously improves the quality of its products and services.

There are still many questions that remain unanswered which we hope our future research will address. Among them is the issue of causality. To unravel this issue, we will be administering our survey research on the organizational value of training and education (i.e., the Human Performance Practices Survey) annually. As the number of organizations that participate increases each year and we develop a set of longitudinal data, we hope to be able to isolate the overall value generated by training and education investments. We also intend to begin to draw the linkages between the individual/job level impacts of training and organizational outcomes. Beginning in 1998, organizations responding to our annual survey will also report on these outcomes using the standard set of measures we have developed. Eventually, it is our hope that organizations will provide assessments of these "middle ground" impacts for all of their training and education programs and enable us to assess their collective impact on organizational performance.

We believe that organizations can apply a similar measurement approach to other human resource development activities. In doing so, organizations will be able to assess the true and entire value created by their HRD efforts and their intellectual capital as whole. The journey is likely to long and difficult, but the degree to which organizations can undertake such measurements will in large part determine the extent to which they can optimally leverage their intellectual capital.

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Demonstrating the Financial Benefit of Human Resource Development: Status and Update on the Theory and Practice

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A serious problem facing the HRD profession is the perception from managers that HRD is not a good investment. Furthermore, a recent study of HRD practices reports that only 3 percent of the programs in HRD are evaluated in terms of financial impact. Yet, the research clearly demonstrates that HRD interventions focused on performance improvement deliver 8:1 return-on-investment in a year or less. This paper reports this financial benefit research and proposes new areas of financial research.

A recent business page headline from London's Daily Telegraph reads "Training falls down on the job Training."(October 27, 1987, p. 31). This report was based on a study of business leaders. The popular perception that HRD costs organizations more than it returns in benefits has haunted the human resource development (HRD) profession since its inception. And, not being able to change this perception is the Achilles heel of HRD. While organizations are more than economic entities-- organizations are economic entities. Any organization that remains alive will ultimately judge each of its components from a return-on-investment (ROI) framework and they will do it with or without valid data.

To face this challenge, four views of HRD have been presented to the HRD profession. They are: (1) a major business process, something an organization must do to succeed, (2) a value-added activity, something that is potentially worth doing, (3) an optional activity, something that is nice to do, and (4) a waste of business resources, something that has costs exceeding the benefits (Swanson, 1995).

The dominant view of HRD is within options 3 and 4 above-- HRD as being an optional activity or having costs greater than its benefits. The simple idea that HRD is not a good investment is popular and entrenched. Economist Paul Krugman (1994) informs us of the dangers of pop economics and the fact that simple ideas [right or wrong] have staying power.

A recent study by the ASTD, the profession's largest practitioner organization, reports that in terms of actual evaluation of HRD programs in the field, "three percent are evaluated for financial impact." (Bassi, Benson, & Cheney, 1996, p. 11). The irony is that ASTD has been the chief advocate of the profession's most widely endorsed evaluation scheme, Donald Kirkpatrick's simple, yet flawed and impotent, four-level evaluation model (Alliger & Janak, 1989; Holton, 1996). Even Kirkpatrick's recent best selling book is void of any elementary economic or psychometric theory (see Kirkpatrick, 1994).

Problem Statement, Historical Framework, and Research Questions

Decision makers in organizations must work up budgets, justify their own salaries, and propose strategies, projects, and programs to top management. Unlike other managers, HRD people tend to resist doing these tasks. The most likely reasons for this are that they originally chose their profession because they were hands-on and people oriented and not inclined toward the financial side of the organization.

A Short History Economic thinking related to human capacity, human expertise, and human effort and the effects of each is disjointed. History provides a fairly consistent notion that there is much to be gained by being purposeful in managing these domains. Throughout history, the ideological responses to capturing the spoils of human expertise have ranged from communes, to slavery, to meritocracies. Whatever the ideology-- "There's money in those skills!"

The importance of increasing one's expertise is confirmed in society's comparisons of educational levels and economic success. Even so, investments in the development of its personnel is still not a clear option for most firms. Organizations can access expertise in ways other than offering development programs. For example, they can hire expertise and/or establish

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the expectation that employees will manage the development of their own expertise. Neither of these two options require an organization to make direct financial outlays for HRD.

For the HRD profession, the "Training Within Industry" project (Dooley, 1945) was a watershed. This 1940-45 massive national performance improvement effort clearly and consistently demonstrated the economic impact of HRD and the required conditions for achieving financial benefits.

In the 1960s and 1970s a renaissance in the profession provided incentive to think more about HRD as an investment. The literature increasingly reported financial analysis methods (FAM) and studies of programs' costs and benefits (Cullen, Sawzin, Sisson, & Swanson, 1976, 1978; Gilbert, 1978; Meissner, 1964; Swanson & Sawzin, 1975). In the 1980s this financial analysis trend continued with a greater focus on costs and the human resource management perspective versus performance improvement (Cascio, 1987; Flamholtz, 1985; Head, 1985; Kearsley, 1982; Spencer, 1986). These company-wide FAMs took an accounting perspective rather than a performance improvement perspective.

To the 1980s, FAM efforts in HRD did not address the decision-making dilemmas faced by organizations at the investment decision stage of their organizational planning. Difficult as it may seem, any organization can conduct an after-the-fact cost-benefit analysis . What was needed was a method for forecasting those costs and benefits, at the point of making investment decisions. The forecasting financial benefits (FFB) of HRD method was designed to fill this gap (Swanson, Lewis, & Boyer, 1982; Swanson & Geroy, 1983; Swanson & Gradous, 1988). The FFB is a practical step-by-step method for making accurate investment decisions based of forecasting (1) the financial value of improved performance projections for a program , (2) the cost of implementing a program, and (3) the return on the program investment (Swanson & Gradous, 1988). The FFB method is best suited to short term HRD interventions purposefully connected to performance deficiencies. The problem facing the FFB method is that it is not as easily applied to large scale change, long-term change, and to interventions loosely connected to performance requirements.

Research Questions The following three questions serve as the basic of this inquiry:

1. What core findings relevant to the financial analysis of HRD have appeared in the literature?
2. What core findings relevant to the forecasting of financial benefits of HRD have appeared in the literature?
3. What new FAM theories and tools have been reported in the literature that HRD should pursue?

Core Financial Analysis Method (FAM)

The core FAM method, based upon several years of research, has proven to be a helpful tool to overcome the difficult and often resisted problem of talking about human resource development in dollar and cents terms (Swanson & Gradous, 1988). The model and method for analyzing actual and forecasted financial benefits are relatively simple and straight forward. They both have three main components: (1) the performance value resulting from the program, (2) the cost of the program, and (3) the benefit resulting from the program.

The basic financial analysis model is:

Performance Value
- Cost
Benefit

The FAM method is an expansion of the three components into three separate worksheets. Readers wishing to receive detailed instruction on the should obtain the author's full text (Swanson & Gradous, 1988). For a broad overview of FAMs in context of HRD, see Mosier (1990). In addition, the bibliography serves to capture important literature related to the financial analysis of HRD beyond just those studies cited directly in this paper.

Five Early HRD Financial Analysis Classics

There is a substantial cache of HRD economic research. Unfortunately, it spread throughout the refereed, non-refereed , HRD, and non-HRD literature and generally is not in the hands of HRD decision makers. Five early classics provide excellent examples. In chronological order, each is briefly abstracted:

1. Dooley, C. R. (1945). The training within industry report, 1910-1945. Washington, DC: War Manpower Commission Bureau of Training, Training Within Industry Service.

While this 330 page report of a massive five-year nation-wide effort is not a research report, it contains data sprinkled throughout on the financial results of sample TWI programs that are worth noting. The refrain of TWI personnel was, "will it fix a production problem?" If not, they did not support the program. When they did support a program, they were able to track the results. The optical lens grinding case study established a $15 value to the quality completion of a grinding task (p. 271-292). At the time, this financial value was quite significant and was magnified by the large number of new workers needed to grind lenses. In another report, improved methods at one arsenal were determined to exceed a savings of $1,000,000.

2. Meissner, F. (1964). Measuring quantitatively the effect of personnel training. Training Directors Journal. 18(3), 230-236.

This study of "simple" work behavior, bagging groceries, compared bagging training to no-training. The underlying premise was that there is a right or optimal way of doing any work and that there are financial consequences to expertise. A major paper manufacturer conducted 20 in-store experiments to determine the cost-effectiveness of a training program in "bagsmanship." The dependent variable was bag costs. The study concluded that there is an 8:1 ROI on the training investment if stores paid for the training materials and 11:1 ROI for stores if the bag supplier paid for the training materials portion of the cost. The further assumption was that the consideration of damaged goods and improved customer relations would increase the ROI.

3. Thomas, B., Maxham, J., & Jones, J.G.G. (1969). A cost benefit analysis of industrial training. British Journal of Industrial Relations, 7(2), 231-264.

This study compared the cost-effectiveness of two alternative forms of general training for clothing machine operators (labeled "new" and "old"). The analysis was based on a comparison of performance among 139 old and 92 new trainee/workers over a four year period. The dependent variables were performance levels, retention, and length of the training period. It was found that the average performance level of new trainee/workers increased as much as 30% during the first year following innovative training and then leveled off. The ratio of benefits to costs over the four year period was 8:1.

4. Swanson, R. A., & Sawzin, S. A. (1975). Industrial training research project. Bowling Green, OH: Bowling Green State University. (also reported later in the literature as: Cullen, G., Sawzin, S., Sisson, G. R., & Swanson, R. A. (1976). Training, what's it worth? Training and Development Journal, 30(8), 12-20).

This controlled experimental study compared structured on-the-job training to unstructured on-the-job training for two groups of 20 semi-skilled extrusion molder operators. The dependent variable was expertise in being able to produce "quality plastic pipe." The results of this study concluded that the training time required to reach competence under unstructured training was significantly higher ($p<.005$) than the structured method (16.3 versus 4.55 hours), structured training workers produced significantly less waste ($p<.01$) and solved significantly more production problems ($p<.025$), and that the financial break-even point in absorbing the development and delivery costs of structured training for trainees (compared to no development and delivery costs of unstructured on-the-job training) was at 10 trainees. Every trainee beyond the 10 represents additional ROI on the existing training investment. Extension of the data to the actual numbers of employees requiring training yielded a 10:1 ROI in a two month period.

5. Rosentreter, G. E. (1979). Economic evaluation of a training program. In R. O. Peterson (Ed.) Studies in Training and Development: Research Papers from the 1978 ASTD National Conference. Madison, WI: ASTD Press.

This financial analysis of an adult education program offered through a community college to company managers focused on communication skills for goal setting. Of the 68 managers, 34 attended the 15 hour communication skills training. The dependent variables were employee turnover, employee punctuality, and grievances. The results in all three domains were compared between the employees reporting to the trained and untrained supervisors. There was no significant difference in the punctuality and numbers of grievances filed between the experimental and control groups. There was a significant difference in turnover that turnover was financially analyzed. Given the financial consequences of the reduced turnover, there was a 9:1 ROI for the communication skills training.

Summary. The research results from these varied studies were quite consistent. They demonstrated that HRD imbedded in a purposeful performance improvement framework yielded very high returns on investments, an ROI of 8:1 or more in a year or less.

From Financial Analysis of Methods (FAM) to Forecasting Financial Benefits (FFB)

There are a substantial number of studies in the realm of *forecasting* the financial benefits of HRD. This FFB literature is also dispersed in the HRD literature. Again, five studies have been identified, presented in chronological order, and briefly abstracted.

1. Geroy, G. D., & Swanson, R. A. (1984). Forecasting training costs and benefits in industry. Journal of Epsilon Pi Tau, 10(2), 15-19.

This study forecasted the financial benefits of a geometric dimension and tolerancing training program for 136 Onan Corporation employees. Using the FFB method, mangers forecasted ROIs of 7:1, 11:1, 11:1, and 22:1. All agreed that the training would be a sound investment for the corporation. The follow-up financial analysis of actual performance of two trained workers yielded a ROI of 27:1 on one and 159:1 on another. This ideal situation had relevant, low-cost training ($80.50 per employee) and high gain application opportunities in the workplace. In this study, the benefits derived from just two employees paid for training all 136 employees and then some.

2. Swanson, R. A. & Gradous, D. B. (1988). Forecasting financial benefits of human resource development. San Francisco: Jossey-Bass.

This comprehensive book puts forth the theory and practice of forecasting the financial benefits (FFB) of human resource development. Also included in the book are eight cases and supporting data from actual organizations. The ROI of all these cases met or exceeded 8:1.

3. Swanson, R. A. & Sleezer, C. M. (1989). Determining financial benefits of an organization development program. Performance Improvement Quarterly, 2(1) 55-65.

This study from a health maintenance organization reports the forecasted and actual performance values, costs, and benefits from a complex company-wide organization development intervention that was combined with an aggressive marketing campaign. The dependent variable was "members." The forecasting portion of the study yielded underestimates of the actual data, but led to valid investment decisions, the purpose of the forecasting method. Thus, this phase further validated the FFB method. In terms of the total actual performance value resulting from the performance improvement effort, two top executives were called upon to estimate the relative contribution of the marketing and organization development components to the total 12.5 million dollar gain. One executive estimated the OD performance value contribution resulting from the $44,590 OD investment as $5,040,000 (11:1 ROI) and the other estimated it to be $7,452,000 (16.4:1 ROI).

4. Jacobs, R., Jones, M., & Neil, S. (1992). A case study in forecasting the financial benefits of unstructured and structured on-the-job training. Human Resource Development Quarterly, 3(2), 133-139.

This case study compared the forecasted financial benefits between unstructured and structured forms of on-the-job training. The setting of a large truck-assembly plant and a focus on three production job tasks resulted in the forecasted structured OJT performance value being twice the performance value of unstructured OJT at the end of an equivalent evaluation period. From a ROI perspective, the forecasted $39.04 average training cost per worker on task #1 resulted in an added average performance gain of $16,065 over the unstructured training option. This resulted in a forecasted 411:1 ROI for the training investment. The forecasted $195.20 average training cost per worker on task #2 resulted in an added average performance gain of $3,174.75 over the unstructured training option. This resulted in a forecasted 16:1 ROI for the training investment. The forecasted $139.40 average training cost per worker on task #3 resulted in a added average performance gain of $8,889.30 over the unstructured training option. This resulted in a forecasted 63:1 ROI for the training investment.

5. Clements, J. C. & Josiam, B. M. (1995). Training: quantifying the financial benefits. International Journal of Contemporary Hospitality Management, 7(1), 10-15.

This case studied applied the FFB method to an actual small hotel franchise disguised as BUDSYS Hotels (they have traditionally relied on the buddy system of training new employees) . The dependent variable was front desk transactions. The case goes on to forecast the performance values, training costs, and benefits of unstructured buddy-system training to a structured self-

tutorial package. The forecasted $81,000 performance gain from the structured training over the unstructured option represents a forecasted 8.7:1 ROI in three months.

Summary. These studies clearly demonstrate that HRD can be a very sound financial investment. The research further provides evidence that HRD interventions focused on appropriate dependent performance variables and systematically executed will financially forecast and return 8:1 or more. In contrast, there is no evidence that unfocused and unsystematic HRD interventions yield positive returns or returns that even exceed their costs.

Update from Recent Financial Analysis Research

There is a substantial array of new HRD related economic research studies. In chronological order, five selected studies are briefly abstracted along with implications for HRD.

1. D'Aveni, R. A. & Ravensscraft, D. J. (1994). Economies of integration versus bureaucracy costs: Does vertical integration improve performance? Academy of Management Journal. 37(5), 1167-1206.

D'Aveni and Ravensscraft (1994) studied vertical integration, cost structure, and performance at the line-of-business level. They concluded that vertical integration results in overall lowered costs in spite of the additional bureaucratic costs. Vertical integration cost reductions "may arise from transaction-related costs, shared common costs, and enhanced productivity" (p. 1193). The effect on HRD when an organization alters its structure (e.g. vertical integration) is fundamental and the ability of HRD to be central to the organization is dependent on its ability (1) to respond systemically (bureaucratically) and (2) to demonstrate its economic contributions (improvements in transaction-related costs, shared common costs, and enhanced productivity). The structural impact on HRD has to do with alignment with business unit versus having a function and programs that transcend sub-units. While opinions sway over time, the economics of these organization strategies for HRD should be studied.

2. Romanelli, E. & Tushman, M. L. (1994). Organizational transformation as punctuated equilibrium: An empirical test. Academy of Management Journal, 37(5) 1141-1166.

Romanelli and Tushman report that "small change in strategies, structures, and power distributions did not accumulate to produce fundamental transformations" (p. 1141). Their view of revolutionary change largely discounts HRD transformational theories and practices of working from the bottom-up or from the middle-out. They further conclude that the popular cascading model of change within a framework of interdependent relationships actually resists change and prevents small changes in organizational sub-units from taking hold. This and other similar studies challenges the viability of HRD to be a major contributor to the long-term economic vitality of an organization and deserve further research. The results of this line of research would ultimately challenge and refine the mission of HRD and how it positions itself in the organization.

3. Hendricks, K. B. & Singhal, V. R. (1995). Does implementing an effective TQM program actually improve operating performance? Empirical evidence from firms that have won quality awards. Williamsburg, VA: School of Business, College of William and Mary.

This study, sponsored by the US Labor Department, pursues the hypothesizes as to the effectiveness of TQM on firm performance. TQM companies showed significant gains in the dependent variables of operating income and sales growth, capital expenditures, employment growth, and total assets compared to the sample of control group of firms. There were no significant differences in cost control. This study of company-wide implementation of an intensive personnel development intervention (TQM) and the utilization of standard economic performance data over time as compared to a control group of firms casts a large economic analysis net. Comparisons of the economic performance of multiple firms that invest in their human resources compared to those that do not need to be studied by the profession. Such studies would serve to better understand the economic contribution of the human capital to an organization.

4. Lyau, N. M., Pucel, D. J. (1995). Economic return on training at the organization level. Performance Improvement Quarterly, 8(3), 68-79.

This study examined labor-productivity returns from investments in a manufacturing industry and its 237 large and medium-sized firms. Two labor-productivity dependent variables (sales per worker and direct costs of training) and two training investment dependent variables (total training costs and direct costs of training) were studied. A significant relationship between investments in training and labor productivity as measured by value added per worker was found. This is defined as the dollar value of products sold, minus the cost of the materials in those

products, divided by the number of workers. On the average, firms increasing their training expenditure by 10% could expect a 1.0% to 1.2% increase in the level of labor productivity. Studies that lead to core generalizations as to the return on company-wide expenditures are needed to advance HRD's status in the operational budgeting process.

5. Swanson, R. A. & Mattson, B. W. (1997). Development and validation of the critical outcome technique(COT). In R. Torraco (Ed.) Academy of Human Resource Development 1996 Annual Proceedings. 64-71.

The COT represents a unique development in post-hoc program evaluation. Until now, the primary avenue of being able to predictably demonstrate the financial results of HRD has been through a systematic development process including up-front performance analysis and systematic evaluation. The COT is conceptually similar to the famed Critical Incident Technique in that it functions within the milieu of an ongoing organization while yielding critical outcome data. The five steps include (1) outcome verification, (2) outcome inquiry, (3) outcome verification and attribution, (4) outcome valuation, and (5) outcome report (see Swanson, 1996; Mattson, Quartanna, & Swanson, 1998). Metaphorically, the COT is a "strategy for finding the needle [financial performance] in the haystack [organization]" and could be an appropriate and powerful tool for validating the financial impact of certain HRD interventions.

Summary. Each of these studies provide a challenge and opportunity in the financial analysis of HRD benefits. Furthermore, each is worthy of further research.

Conclusion

Economics has been purported to be one of the foundational theories of the HRD discipline. As such, it is critical to continually update the status of the economic theories and practices relevant to HRD. While the existing FAM methods available to the HRD profession are too rarely used , updating the theory and methodology may serve to change this condition.

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